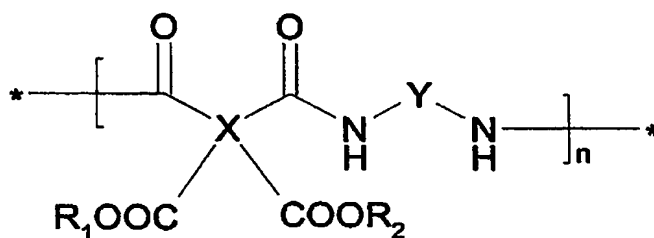


**What is claimed is:**

1. A reactive transparent polyimide precursor having the structure in the following Chemical Formula 1:

5

<Chemical Formula 1>



where X is a tetra-valent organic group derived from  
10 alicyclic tetracarboxylic acid dianhydrides having 3 to 30  
carbon atoms;

Y is a di-valent organic group derived from aliphatic,  
alicyclic, or non-conjugated aromatic diamines having 3 to 30  
carbon atoms; and

15  $R_1$  and  $R_2$  are hydrogen atoms or organic groups having 1  
to 20 carbon atoms including one or more ethylenically  
unsaturated bonds, but cannot be hydrogen atoms at the same  
time.

20 2. The reactive transparent polyimide precursor according  
to Claim 1, wherein the acid value of said reactive transparent  
polyimide precursors is within a range of 30 to 200 mg KOH/g.

3. The reactive transparent polyimide precursor according to Claim 1, wherein the molecular weight of said reactive transparent polyimide precursors is within a range of 2,000 to 200,000.

4. A method of manufacturing said reactive transparent polyimide precursor having said Chemical Formula 1 of Claim 1 comprising the steps of:

10 manufacturing a transparent linear polyamic acid (A) having (a-1) one or more kinds of tetracarboxylic acid dianhydrides selected from alicyclic tetracarboxylic acid dianhydrides having 3 to 30 carbon atoms, and (a-2) one or more kinds of diamines selected from aliphatic, alicyclic, or 15 non-conjugated aromatic diamines having 3 to 30 carbon atoms including one or more ethylenically unsaturated bonds at side chains as essential components; and

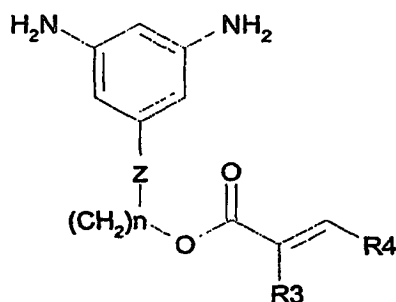
esterifying said transparent linear polyamic acid (A) manufactured in the above with an ethylenically unsaturated 20 compound (B) containing an epoxy group in the same molecule.

5. The method of manufacture of said reactive transparent polyimide precursors according to Claim 4, wherein said tetracarboxylic acid dianhydrides are one or more kinds of 25 anhydrides selected from the group consisting of 1,2,3,4-

cyclobutanetetracarboxylic acid dianhydride (CBDA),  
 1,2,3,4-cyclopentanetetracarboxylic acid dianhydride (CPDA),  
 bicyclooct-7-ene-2,3,5,6-tetracarboxylic acid dianhydride  
 (BODA), 5-(2,5-dioxytetrahydrofuran-3-yl)-3-  
 5 methylcyclohexene-1,2-dicarboxylic acid anhydride (DOCDA),  
 and 4-(2,5-dioxotetrahydrofuran-3-yl)-tetralin-1,2-  
 dicarboxylic acid anhydride (DOTDA).

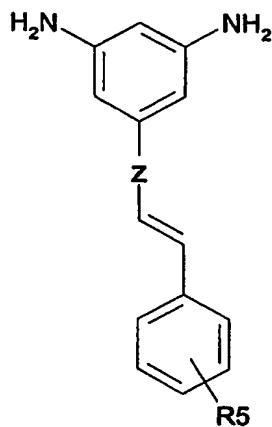
6. The method of manufacture of said reactive transparent  
 10 polyimide precursors according to Claim 4, wherein said  
 diamines are one or more kinds of diamines selected from the  
 group consisting of diamines having the general formula shown  
 in the following Chemical Formulas 7 to 9:

15 <Chemical Formula 7>

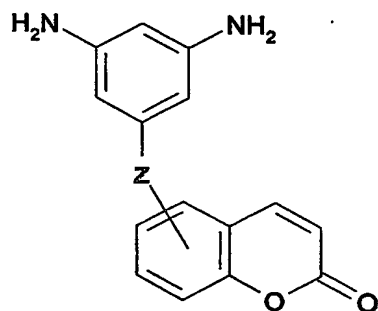


<Chemical Formula 8>

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&lt;Chemical Formula 9&gt;



5        where Z is one of ester, amide, imide, ether, and carbonyl group;

$R_3$ ,  $R_4$ , and  $R_5$  are hydrogen atoms or alkyl or allyl groups having 1 to 20 carbon atoms; and

      n is an integer between 1 to 20.

10

7. The method of manufacture of said reactive transparent polyimide precursors according to Claim 4, wherein said diamines are one or more kinds of diamines selected from the group consisting of 2-(methacryloyloxy)ethyl 3,5-

diaminobenzoate, 3,5-diaminophenyl cinnamate, and coumaronyl 3,5-diaminobenzoate.

8. The method of manufacture of said reactive transparent  
5 polyimide precursors according to Claim 4, wherein said  
ethylenically unsaturated compound (B) containing an epoxy  
group in the same molecule is one or more kinds of compounds  
selected from the group consisting of allyl glycidyl ether,  
glycidyl acrylate, glycidyl methacrylate, 3,4-  
10 epoxycyclohexylmethyl acrylate, 3,4-epoxycyclohexylmethyl  
methacrylate, glycidyl 5-norbornene-2-carboxylate (a mixture  
of endo and exo), glycidyl 5-norbornene-2-methyl-2-carboxylate  
(a mixture of endo and exo), 1,2-epoxy-5-hexene, and 1,2-  
epoxy-9-decene.

15

9. A photosensitive polyimide precursor resin composition,  
manufactured by using said reactive transparent polyimide  
precursor of Claim 1 and one or more kinds of photo-initiators  
as essential components, and adding one or more kinds of  
20 compounds selected from the group consisting of  
photosensitizers, multi-functional monomers, and common  
coating additives.

10. The photosensitive polyimide precursor resin  
25 composition according to Claim 9, wherein the weight of said

reactive transparent polyimide precursor is 10 to 99 weight % relative to the weight of the total solids and the weight of said photo-initiators is 0.1 to 90 weight % relative to the weight of the total solids.

5

11. The photosensitive polyimide precursor resin composition according to Claim 9, wherein the thickness of polyimide films thus obtained is 0.5 to 100  $\mu\text{m}$ .

10

12. The photosensitive polyimide precursor resin composition according to Claim 9, wherein the thermal decomposition temperature of polyimide films thus obtained is within a range of 300 to 500°C.

15

13. The photosensitive polyimide precursor resin composition according to Claim 9, wherein transmittance between 400 to 700 nm of polyimide films obtained is greater than 90%.

20

14. The photosensitive polyimide precursor resin composition according to Claim 9, wherein the dielectric constant of polyimide films measured at 1 kHz is within a range of 2.5 to 4.0.

25

15. A photosensitive transparent protection layers or insulation layers, manufactured by using said photosensitive

polyimide precursor composition obtained in Claim 9.

16. A liquid crystal display device, characterized in that  
said photosensitive polyimide precursor composition obtained  
5 in Claim 9 is applied to transparent protection layers or  
insulation layers.

17. A liquid crystal display devices, characterized in  
that said photosensitive polyimide precursor composition  
10 obtained in Claim 9 is applied to organic insulation materials  
for liquid crystal display devices.